What is claimed:

1. A ceramic filter for trapping and combusting diesel exhaust particulates comprising an end-plugged cordierite honeycomb structure, wherein:

   a quantity $d_{50}/(d_{50}+d_{90})$ as related to pore size distribution is less than 0.70;

   a soot loaded permeability factor $S_f$, as defined by the equation

   $[d_{50}/(d_{50}+d_{90})]/[\%porosity/100]$, is less than 1.55; and,

   a coefficient of thermal expansion (25-800°C) is no greater than $17 \times 10^{-7}/°C$.

2. A ceramic filter according to claim 1 wherein the soot loaded permeability factor $S_f$, is between 0.83 and 1.40.
3. A ceramic filter according to claim 2 wherein the soot loaded permeability factor $S_f$, is between 0.83 and 1.35.
4. A ceramic filter according to claim 1 wherein the quantity $d_{50}/(d_{50}+d_{90})$ is less than 0.65.
5. A ceramic filter according to claim 2 wherein the quantity $d_{50}/(d_{50}+d_{90})$ is less than 0.60.
6. A ceramic filter according to claim 1 wherein the coefficient of thermal expansion (25-800°C) is less than $10 \times 10^{-7}/°C$.
7. A ceramic filter according to claim 6 wherein the coefficient of thermal expansion (25-800°C) is less than $5 \times 10^{-7}/°C$.
8. A ceramic filter according to claim 1 wherein a median pore diameter, $d_{50}$, is at least 4 micrometers and up to 40 micrometers.
9. A ceramic filter according to claim 8 wherein the median pore diameter, $d_{50}$, is between 6 micrometers and 25 micrometers.
10. A ceramic filter according to claim 9 wherein median pore diameter, $d_{50}$, is between 7 micrometers and 15 micrometers.

11. A ceramic filter according to claim 1 wherein a quantity $d_{90}/d_{50}$ as related to pore size distribution is greater than 0.40.

12. A ceramic filter according to claim 11 wherein the quantity $d_{90}/d_{50}$ as related to pore size distribution is greater than 0.55.

13. A ceramic filter according to claim 12 wherein the quantity $d_{90}/d_{50}$ as related to pore size distribution is greater than 0.60.

14. A ceramic filter according to claim 1 wherein a quantity $(d_{50}-d_{90})/d_{50}$ as related to pore size distribution is less than 0.60.

15. A ceramic filter according to claim 1 wherein the quantity $(d_{50}-d_{90})/d_{50}$ as related to pore size distribution is less than 0.50.

16. A ceramic filter according to claim 1 wherein the quantity $(d_{50}-d_{90})/d_{50}$ as related to pore size distribution is less than 0.40.

17. A ceramic filter according to claim 1 wherein a porosity is at least 40% by volume, and less than 60%.

18. A ceramic filter according to claim 17 wherein the porosity is 50% by volume.

19. A ceramic filter according to claim 18 wherein the porosity is 55% by volume.

20. A ceramic filter according to claim 1 wherein a filter volumetric heat capacity is at least 0.67 J $cm^{-3}$ $K^{-1}$ at 500°C.

21. A ceramic filter according to claim 1 wherein the filter volumetric heat capacity is at least 0.76 J $cm^{-3}$ $K^{-1}$ at 500°C.

22. A ceramic filter according to claim 1 wherein the filter volumetric heat capacity is at least 0.85 J $cm^{-3}$ $K^{-1}$ at 500°C.

23. A method for fabricating a wall-flow filter and comprising:

(a) forming a batch of raw materials comprising magnesium oxide, alumina and silica raw materials in combination with extrusion forming aids;

(b) plasticizing and shaping the batch, wherein the shaping is done through an extrusion die to form a green honeycomb body having an inlet end, an outlet end, and a multiplicity of cells extending from the inlet end to the outlet end;

(c) drying and firing the green honeycomb body to form a structure which is predominately of a phase approximating the stoichiometry of $Mg_2Al_4Si_5O_{18}$ and exhibits a pore size distribution as determined by mercury porosimetry in which the quantity $d_{50}/(d_{50}+d_{90})$ is less than 0.70; a soot loaded permeability factor $S_f$, as defined by the equation $[d_{50}/(d_{50}+d_{90})]/[\%porosity/100]$, of less than 1.55; and,

a coefficient of thermal expansion (25-800°C) of no greater than $17 \times 10^{-7}/°C$;

(d) plugging a first portion of cells at the inlet end, and a second portion of cells at the outlet end such that each cell is plugged at only one end.

24. The method of claim 23 wherein the batch further includes spinel having a stoichiometry of $MgAl_2O_4$.

25. The method of claim 23 wherein the batch further includes a pore former.

26. The method of claim 25 wherein the pore former is selected from the group consisting of graphite, cellulose, starch, polyacrylates and polyethylenes, and combinations thereof.

27. The method of claim 26 wherein the pore former has a median particle diameter of 3-140 micrometers.

28. The method of claim 27 wherein the pore former has a median particle diameter of 5-80 micrometers.

29. The method of claim 28 wherein the pore former has a median particle diameter of 10-50 micrometers.

30. The method of claim 23 wherein magnesium oxide is supplied from the group consisting of magnesium oxide, magnesium hydroxide, magnesium carbonate, magnesium nitrate and mixtures thereof.

31. The method of claim 23 wherein the alumina is supplied from the group consisting of aluminum oxide, aluminum hydroxide, hydrated alumina, alpha alumina, gamma-alumina, rho-alumina, boehmite, aluminum nitrate, aluminum carbonate and mixtures thereof.

32. The method of claim 23 wherein the silica is supplied from the group consisting quartz, cristobalite, fused silica, sol-gel silica, zeolite, colloidal silica, alpha quartz, and mixtures thereof.

33. The method of claim 23 wherein the extrusion forming aids comprise 2-10% by weight methylcellulose as binder, and 0.5-1.0% by weight sodium stearate as lubricant.

34. The method of claim 23 wherein the firing is done at a rate of 15-100°C/hr to a maximum temperature of 1405-1430°C, with a hold of 6-25 hrs.